

C l a i m s

1. A flexible electrical heating unit, having a heating device (10) with a flexible support and a heating cord inserted therein, at least one control member (12) for a heating current (i_H) arranged in at least one heating circuit (17) and a triggering circuit (20) acting thereon,

characterized in that

the triggering circuit (20) has a time control circuit (21), by means of which a heating output can be controlled or regulated which, for generating a starting temperature at the surface of the support during a preset initial length of time, a heating output, which is increased in comparison with a subsequent continuous operating phase determined by a reference variable in accordance with an increased reference variable can be controlled or regulated, while during the continuous operating phase at most one heating output permissible also for unmonitored operation is set for causing a lower surface temperature of the support than during the initial phase, or wherein a switch-off of the heating current (i_H) takes place after the initial length of time.

2. The heating unit in accordance with claim 1,
characterized in that

the triggering circuit (20) is designed in such a way that the size and/or length of the increased heating output during the length of the starting phase Δt_a is controlled or regulated as a function of a heating output manually selected for the continuous heating phase.

3. The heating unit in accordance with claim 1 or 2,
characterized in that

the time control circuit (21) has been embodied in such
a way that it acts by means of an output signal on an output-
actuating circuit (25) arranged in the triggering circuit
(20), by means of which the control member (12) can be
triggered.

4. The heating unit in accordance with claim 3,
characterized in that

a reference variable can be superimposed on the output
signal of the time control circuit (21) by means of charging
it with a reference variable (26.1).

5. The heating unit in accordance with one of the
preceding claims,

characterized in that

the triggering circuit (20) has an insulation
monitoring stage (11.1) for an insulation located between the
heating wires contained in the heating cord, a monitoring
stage (23) for the interior temperature of the housing, or a
limiting stage (24), or a combination of at least two of
these stages, and

the triggering circuit is embodied in such a way that
the amount and/or length of the generated heating output
caused by influence of the time control circuit (21) is
limited in case of a faulty status discovered in at least one
of the stages, or the heating output is completely shut down.

6. The heating unit in accordance with claim 5,
characterized in that

a further control member (13), which can be triggered by the triggering circuit (20), is arranged in the heating circuit (17) and is triggered in case of a faulty state to limit, reduce or shut off the heating current (iH).

7. The heating unit in accordance with claim 6, characterized in that at least one output signal of the stages (11.1, 23, 24) is used for triggering the further control member (13).

8. The heating unit in accordance with one of claims 5 to 7,

characterized in that the triggering circuit (20) is embodied in such a way that the, or a further, output signal of the time control circuit (21) is supplied to at least one stage (11.1, 23, 24), and

the at least one stage (11, 23, 24) is embodied in such a way that, as in an abnormal state, it acts on the control member (12) and/or the further control member (13), for limiting, reducing or interrupting the heating current (iH), or

the triggering circuit (20) is embodied in such a way that the, or the further, output signal is applied directly to the further control member (13) for limiting, reducing or interrupting the heating current (iH).

9. The heating unit in accordance with one of claims 5 to 7,

characterized in that at least one stage (11.1, 23, 24) is connected with an

output to an input of the time control circuit (21), and the time control circuit (21) is embodied in such a way that upon receipt of an output signal from the stage (11.1, 23, 24) it emits an output signal for limiting, reducing or interrupting the heating current (iH).

10. The heating unit in accordance with one of the preceding claims,

characterized in that

for switching off the electrical supply voltage, the time control circuit (21) is brought into an active electrical connection with a switch (30) of the energy supply device (33, 32) of the heating unit, with the triggering circuit (20), or a component of the latter, or directly with the further control member (13).

11. The heating unit in accordance with one of the preceding claims,

characterized in that

the progressions of the heating output for affecting the surface temperature in respect to size and/or length are stored in a memory as a function of a manually selected output stage or type of operating application, and can be called up for controlling and adjusting the heating output.

12. The heating unit in accordance with claim 11,

characterized in that

further progressions are stored in the memory in connection with an output stage change-over during an operating phase, and can be called up as a result of the change-over.

13. The heating unit in accordance with one of the preceding claims,

characterized in that

the time control circuit (21) is connected with an indicator device (21.1) for the status of the time control circuit and/or the device functions.

14. The heating unit in accordance with one of the preceding claims,

characterized in that

in a parallel branch (17.2), which is located parallel with a control branch (17.1) of the heating circuit (17) having the at least one control member (12), a higher order safety shut-off device (14) is provided for shutting off the heating unit in case of a dangerous situation.

15. The heating unit in accordance with one of the preceding claims,

characterized in that

the heating cord is constructed in such a way that a safety shut-off takes place in case of an excess temperature.